UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,436	03/19/2004	Mark B. Lyles	068351.0144	7276

31625 7590 04/19/2007

BAKER BOTTS L.L.P.
PATENT DEPARTMENT
98 SAN JACINTO BLVD., SUITE 1500
AUSTIN, TX 78701-4039

EXAMINER	
SINGH, SATYENDRA K	
ART UNIT	**PAPER NUMBER**
1657	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,436	LYLES, MARK B.	
	Examiner	Art Unit	
	Satyendra K. Singh	1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-20* is/are pending in the application.

4a) Of the above claim(s) *1-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-20* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/24/04;4/20/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response and amendments to the claims filed with the office on March 7th 2007 is duly acknowledged.

Claims 1-10 (non-elected invention of group I) are withdrawn from further consideration.

Claims 11-20 (elected invention of group II) are examined on their merits in this office action.

Election/Restrictions

Applicant's election of **group II** (claims 11-20 drawn to a method o dispersing living cells) in the reply filed on March 7th 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, and did not explicitly state if the election has been made with or without traverse, the applicant's election of group II has been treated as an election **without traverse** (MPEP § 818.03(a)).

Claim Suggestions

Claims 19 and 20 contain minor informalities (as typographical errors) in recitations. Instant claims should be appropriately amended to recite as follows:

Claim 19. The method of claim 11, further (comprising the step of) dispersing **at** least two types of autologous cells, separately **onto** the area lacking normal, healthy skin using the air-jet sprayer.

Claim 20. The method of claim 11, further comprising dispensing at least one **of** antibiotic, cytokine, adhesion factor, or growth factor onto the **area** lacking normal, healthy skin using the air-jet sprayer.

Appropriate amendment/correction is requested.

Claim Objections

Claim 14 is objected to because it depends from a **non-elected claim 1** (the invention of group I). Appropriate correction is required.

For examination purposes herein, claim 14 has been taken as being dependent from the broader claim 11 (the elected invention of group II).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 recites the limitation "dispersing the cells onto an area of a subject lacking normal, healthy skin", which is confusing. It is unclear as to **which area** (skin or any other tissue surface, external or internal, of the body) "of a subject lacking normal, healthy skin..." is being referred to for said dispersion of cells, as required by the claimed invention. Appropriate explanation/correction is required.

For examination purposes herein, the instant claim is being interpreted as encompassing a method step of "dispersing the cells onto an **area of skin** of a subject lacking normal, healthy skin using the air-jet sprayer" according to the method as recited in claim 11 by applicants.

2. Claim 11 recites the limitation "**the** receptacle" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 11, 14-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by COHEN et al (2000; [U]).

Claims (as interpreted by the examiner, herein) are generally directed to a method of dispersing living cells comprising suspending autologous cells in a soluble medium; placing the cells into a receptacle of an air-jet sprayer (having a nozzle orifice with a pore size sufficient to allow passage of cells without damage); and dispersing the cells onto an area of skin of a subject lacking normal, healthy skin using the air-jet sprayer (see detailed recitations of instant claims 14-18 and 20).

Cohen et al [U] teach a method of dispersing living skin epidermal cells isolated from the skin of groin area (see abstract, and page 1210, *Materials and Methods*, in particular) comprising suspending autologous cells in a soluble medium (such as RPMI 1640 transport medium containing epidermal cells that are made of keratinocytes, fibroblasts, and stem cells; growth factor such as fetal calf serum; antibiotics such as penicillin and streptomycin; and an adhesion factor such as fibrin glue, Tisseel VH; see pages 1210-1211, right column, in particular); placing the cells into a receptacle (see figure 1 for the device and parts, page 1208, in particular) of an air-jet sprayer (a commercial, three-component aerosolization device that uses compressed air, as shown in figure 1; having a nozzle orifice with a pore size sufficient to allow passage of cells without damage); and dispersing the cells onto an area of skin of a subject lacking normal, healthy skin (using pigs as experimental animals with full-thickness wounds on

the back taken as area of skin lacking normal, healthy skin; see pages 1210-1211, in particular) using the air-jet sprayer; wherein the method further comprises growing a three-dimensional epithelial tissue from the cells in the area lacking normal, healthy skin (see table II-III, figures 3 and 5, and page 1212, in particular). In addition, it is to be noted that Cohen et al explicitly suggest an alternative method such as "to use the cells (i.e. autologous epidermal cells) along with a dermal graft or dermal substitute" (see Cohen et al, page 1214, left column, 1st paragraph, in particular), and thus **invite such modification and/or combination** in the method of dispersing living cells onto an area of skin (even with unfavorable topography) of a subject lacking normal, healthy skin using an air-jet spray device, as recited by the instant invention.

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 11-17 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by MARSHALL et al (US 6,479,052 B1; [A]).

Claims (as interpreted by the examiner, herein) are generally directed to a method of dispersing living cells comprising suspending autologous cells in a soluble medium; placing the cells into a receptacle of an air-jet sprayer (having a nozzle orifice with a pore size sufficient to allow passage of cells without damage); and dispersing the cells onto an area of skin of a subject lacking normal, healthy skin using the air-jet sprayer (see detailed recitations of instant claims 14-18 and 20).

Marshall et al [A] teach a method of dispersing living cells on a skin wound (for example, keratinocytes, fibroblasts, etc.; see abstract, summary of the invention,

column 2, 2nd paragraph; column 4, last paragraph, and claims, in particular) comprising suspending autologous cells in a soluble medium (see example 3, columns 12-13, in particular); placing the cells into a receptacle of an air-jet sprayer (having a nozzle orifice with a pore size sufficient to allow passage of cells without damage; see column 7-8); and dispersing the cells onto an area of skin of a subject (experimental animal such as Large White pig; see column 3, 1st paragraph, and example 3, in particular) lacking normal, healthy skin using the air-jet sprayer; wherein the keratinocytes (i.e. contained in a cell suspension having growth factors such as serum) are sprayed (with or without fibrin sealant, i.e. an adhesion factor) onto a dermal graft (such as Integra; example 3, column 13, in particular) or onto a tissue scaffold (such as fibrin matrix; or other types of biodegradable polymers; see columns 6-7, in particular).

As per MPEP 2111.01, during examination, the claims must be interpreted as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, F.3d, 2004 WL 1067528 (Fed. Cir. May 13, 2004)(The USPTO uses a different standard for construing claims than that used by district courts; during examination the USPTO must give claims their broadest reasonable interpretation.). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over MARSHALL et al (US 6,479,052 B1; [A]).

Claims (as interpreted by the examiner, herein) are generally directed to a method of dispersing living cells comprising suspending autologous cells in a soluble medium; placing the cells into a receptacle of an air-jet sprayer (having a nozzle orifice with a pore size sufficient to allow passage of cells without damage); and dispersing the cells onto an area of skin of a subject lacking normal, healthy skin using the air-jet sprayer (see detailed recitations of instant claims 14-18 and 20).

The teachings of Marshall et al are discussed above and are further relied upon in the same manner, herein. Furthermore, it is to be noted that Marshall et al [A] clearly suggest and disclose a method of dispersing living cells, wherein various types of autologous cells (including keratinocytes, fibroblasts, fertilized ova- taken as a stem cell, etc.) can be delivered separately onto a target (see column 3, 1st paragraph, and column 8, 1st and 2nd paragraphs, in particular), or in combination (i.e. co-dispersed or co-delivered) with other autologous cells, growth factors, bioactive agents, etc. (see column 6, lines 41-46, in particular).

However, a method according to claim 11, wherein the autologous cells further comprise **stem cells** (as recited in instant claim 18), and wherein the method further comprises **separately dispersing** at least two types of autologous cells (see instant claim 19) onto the area of skin of a subject lacking normal, healthy skin using the air-jet sprayer, though suggested, is not explicitly exemplified by the referenced invention of Marshall et al.

Given the fact that Marshall et al explicitly disclose a method for spray delivery of living cells, including keratinocytes with or without fibrin sealant onto a target area such as skin wound, and further disclose spray delivery for the fibroblasts (see column 2, 2nd paragraph, and column 3, 1st paragraph, in particular) and other suitable cells (such as fertilized ova- taken herein as stem cell for its potential), it would have been obvious to a person of ordinary skill in the tissue-repair or regeneration art (at the time the claimed invention was made) to modify the method of Marshall et al such that it further includes fibroblasts, or stem cells (for their potential for enhancing tissue repair and regeneration which is well documented in the wound healing prior art) with a reasonable expectation of success.

The specific limitation of separately delivering two different types of autologous cells would have been a matter of routine optimization of the method to an artisan of ordinary skill in the art, as evidenced by the fact that Marsahll et al disclose individual delivery of autologous keratinocytes, and co-delivery of keratinocytes and fibroblasts (see column 5, 3rd paragraph, column 6, lines 41-46, in particular), and further suggest the fact that the device can be modified to provide more outlets, etc. (see column 8, 1st paragraph, in particular) depending on the need. Therefore, the invention as claimed is fully encompassed by the disclosure of the method of spray delivery of living cells, as disclosed by the prior art, Marshall et al [A].

Thus, the invention as a whole would have been *prima facie* obvious to a person of ordinary skill in the art at the time the claimed invention was made.

As per MPEP 2144.04, *Ex parte Rubin, 128 USPQ 440 (Bd. App. 1959) (Prior art reference disclosing a process of making a laminated sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to render prima facie obvious claims*

directed to a process of making a laminated sheet by reversing the ***order of the prior art process steps****.). See also In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results); In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.).*

As per MPEP 2111.01, during examination, the claims must be interpreted as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, F.3d, 2004 WL 1067528 (Fed. Cir. May 13, 2004)(The USPTO uses a different standard for construing claims than that used by district courts; during examination the USPTO must give claims their broadest reasonable interpretation.). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

Pertinent Prior Art Not Relied Upon in Rejections

1. **ROLLAND et al (US Patent 7,144,729 B2; filed on Dec. 19, 2002),** Methods and compositions for tissue regeneration (discloses a method of dispersing isolated, living cell suspensions containing keratinocytes and fibroblast cells, or a mixture thereof onto a wound site using a suitable spray applicator, with or without fibrin glue, with or without scaffold, or dermal allografts, wherein the order of spraying the components can be readily modified or rearranged depending on the need; see abstract, summary of the invention, figures 4-6, column 7, 21-22, 25-26, and examples such as examples 16-17, in particular).

2. **GRANT I. et al.** The co-application of sprayed cultured autologous keratinocytes and autologous fibrin sealant in a porcine wound model, British J. of Plastic Surgery, 2002, 55: 219-227 (see summary, materials and methods, in particular).

3. **NAVARRO F.A. et al**. Sprayed keratinocytes suspensions accelerate epidermal coverage in a porcine microwound model, J. Burn Care Rehabil., 2000, 21: 513-518 (see abstract and introduction on page 513, Material and Methods, figure 1, and cited reference 8, in particular).

4. **NAVARRO F.A. et al.** Melanocyte repopulation in full-thickness wounds using a cell spray apparatus, J. Burn Care Rehabil., 2001, 22: 41-46 (see abstract on page 41, and materials & methods, in particular).

Conclusion

NO claims are allowed.

Applicants should specifically point out the support for any amendments made to the disclosure, including the claims (MPEP § 714.02 and 2163.06). Due to the procedure outlined in MPEP § 2163.06 for interpreting claims, it is noted that other art may be applicable under 35 USC §102 or 35 USC §103(a) once the aforementioned issue(s) is/are addressed.

Applicant is requested to provide a list of all copending applications that set forth similar subject matter to the present claims. A copy of such copending claims is requested in response to the office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satyendra K. Singh whose telephone number is 571-272-8790. The examiner can normally be reached on 9-5MF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Satyendra K. Singh
Patent Examiner
Art Unit 1657

SANDRA E. SAUCIER
PRIMARY EXAMINER